IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA

UNITED STATES OF AMERICA	:	**CRIMINAL NO. 4:17-CR-394**
	:	
v.	:	**(Chief Judge Conner)**
	:	
XIAO WU ZHOU (1) and	:	
CHUANZE XU (2),	:	
	:	
Defendants	:	

MEMORANDUM

In April 2018, this court resolved a motion to suppress filed by defendants Xiao Wu Zhou ("Zhou") and Chuanze Xu ("Xu"). We held that (1) Pennsylvania State Police Trooper Jeremy Hoy ("Trooper Hoy") had reasonable suspicion that defendants committed a traffic violation which justified initiating a traffic stop on October 31, 2017, and (2) Trooper Hoy then developed reasonable suspicion that defendants were engaged in criminal activity sufficient to extend the duration of that stop and request a canine unit for a dog sniff. Zhou now moves to suppress evidence obtained during that traffic stop based on the alleged impropriety of the dog sniff. (Doc. 72). The court will deny Zhou's motion.

I. **Findings of Fact**[1]

The evidence adduced during the July 19, 2019 evidentiary hearing falls into three categories: fact witness testimony and documentary evidence concerning canine training and procedures; fact witness testimony and documentary evidence regarding the dog sniff conducted during the October 31, 2017 traffic stop; and expert testimony on the issues of natural and trained canine behavior.

A. **Canine Training and Procedures**

In 2011, the Pennsylvania State Police acquired a one-year-old Belgian Malinois named Tom ("Canine Tom"). (Tr. 9:10-15, 21:20-21). Trooper Aaron Tiracorda ("Trooper Tiracorda") was assigned as Canine Tom's handler,[2] and the two began a 12-week basic training course for narcotics detection in May 2011.[3] (Id. at 8:5-13, 8:24-9:4, 9:13-15, 10:7-10, 11:11-14). Handlers train with their canines in "real-life settings"—*e.g.*, buildings and automobiles—using real narcotics, known as "training aids" or "finds." (Id. at 10:11-11:10). Trooper Tiracorda and Canine Tom completed the 12-week course on July 22, 2011. (Id. at 9:13-15). Canine Tom was

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[1] The above factual narrative derives primarily from testimonial and documentary evidence adduced during a suppression hearing convened on July 19, 2019. Citations to the transcript of that hearing are abbreviated as "Tr." Citations to hearing exhibits are abbreviated as "Gov't Ex." or "Def. Ex." When pertinent to the instant motion, we reiterate certain facts from our April 18, 2018 memorandum, which addressed defendants' first motion to suppress. See United States v. Zhou, No. 4:17-CR-394, 2018 WL 1858187 (M.D. Pa. Apr. 18, 2018).

[2] Subsequent to the events of October 31, 2017, Trooper Tiracorda was promoted to the rank of corporal. (Compare Gov't Ex. 4 at 7 with Tr. 7:25-8:2). For clarity, the court will refer to him as Trooper Tiracorda throughout this opinion.

[3] Trooper Tiracorda and Canine Tom worked together for eight years until Canine Tom's retirement on July 12, 2019. (See Tr. 8:9-18).

trained to detect heroin, methamphetamine, marijuana, and cocaine. (Gov't Ex. 4 at 7; Tr. 16:19-23).

Canine teams "must certify annually," attend monthly in-service training sessions, and train a minimum of four hours per week. (Gov't Ex. 11 at 2-3; Tr. 9:16-10:6). Trooper Tiracorda and Canine Tom were most recently certified by the Pennsylvania State Police on October 3, 2017, and October 3, 2018. (Gov't Ex. 6; Gov't Ex. 7; Gov't Ex. 10 at 77). In the ten months preceding the October 31, 2017 traffic stop, Canine Tom located 85 of 89 hidden finds resulting in a 95.5% success rate. (Gov't Ex. 9 at 1, 12, 17, 22, 31, 35, 43, 50, 54, 59).

The canine team proceeds in several steps when responding to a request for an exterior search of a vehicle. Upon arriving at a scene, the handler walks around the vehicle to identify any potential hazards to the canine. (Tr. 20:24-21:9). The handler and canine then engage in a "fast pass" search pattern which involves a systematic search of the vehicle in one direction and then a reverse of that search. (See id. at 36:5-18, 53:5-7). Typically, the handler will commence the search pattern by commanding the canine to "find it." (Id. at 53:2-4).

Trooper Tiracorda defined Canine Tom's alert behavior as "a sudden change in posture [and] an increased respiration when the dog first encounters the odors he's trained to detect."[4] (Id. at 14:19-23). Alert behavior cannot be trained; it is a "natural reaction to stimuli." (Id. at 14:24-15:2). When a canine exhibits alert behavior, the handler conducts a "two-meter rule" exercise. (Id. at 15:3-6). The

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[4] In training records, this alert behavior is also referred to as "air scenting." (Tr. 42:8-18; see, e.g., Gov't Ex. 9 at 53).

handler will "detail" a two-meter area near the location where the canine began

to alert by "cast[ing] productive areas" where contraband may be found. (Id. at

15:3-15). A handler casts by using the back of a hand, without patting a particular

location, to lead the dog to smell within the two-meter area. (Id. at 15:15-17).

A canine is taught to pinpoint the source of the odor first alerted to by

exhibiting trained indication behavior. (Id. at 16:2-7). Canine Tom was trained

to passively indicate the position of narcotics by locking, pointing, and staring at

the location. (Id. at 15:23-16:1, 16:15-18, 16:24-17:12, 44:12-15, 55:21-23). Trooper

Tiracorda explained that Canine Tom was also trained to sit as part of his indication

behavior. (Id. at 16:24-17:6, 29:13-16, 44:12-15). Trooper Tiracorda described sitting

as the preferred posture that accompanies the locking, pointing, and staring. (Id.

at 37:5-8, 44:14-15, 48:22-24, 55:21-24). When the source of an odor is low to the

ground, Canine Tom will sometimes lie down rather than sit. (Id. at 17:7-8, 44:12-

15). And Trooper Tiracorda noted that Canine Tom sometimes stands rather than

sits when exhibiting the lock, point, and stare indication. (Id. at 17:6-7, 29:13-30:4).

Canine Tom is trained to associate the odor of narcotics with finding a toy.

(See id. at 17:23-25, 70:5-6). When Canine Tom locates narcotics, he is rewarded

with various toy-like items.[5] (Id. at 25:20-24). Canine Tom will not stop staring and

will not leave the location of a find until he receives a reward. (See id. at 17:22-18:1,

55:24-56:3, 72:8-11). To remove Canine Tom from a find location in the field without

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[5] Trooper Tiracorda explained that different types of rewards (e.g., rubber
hose, copper hose, wood, etc.) are used so the canines do not conflate the narcotics
with a particular material. (Tr. 25:20-26:5).

rewarding him (for example, in the event of a false indication), Trooper Tiracorda will conduct a "praise off." (See id. at 17:13-18:5, 72:15-24). A praise off involves verbally encouraging or praising Canine Tom for following his training and physically removing him from the location. (Id. at 18:5-7, 25:16-19, 70:2-3, 72:8-11). The praise off is designed to balance two competing goals: (1) to remove Canine Tom from the scene without correcting him (e.g., with a leash tug) for what is likely a successful find and (2) to avoid prematurely rewarding Canine Tom before confirming drugs are present. (See id. at 18:8-10, 25:11-19, 70:12-71:5, 71:12-18, 72:8-24). Once Trooper Tiracorda confirms the presence of drugs, Canine Tom receives a toy reward as positive reinforcement. (Id. at 70:3-4, 71:12-15, 72:15-17).

B.   Dog Sniff of the U-Haul Truck

On October 31, 2017, Trooper Tiracorda responded to Trooper Hoy's request for a canine unit on the eastbound side of Interstate 80 near mile marker 159. Zhou, 2018 WL 1858187, at *2; (Tr. 12:16-13:3). Trooper Tiracorda canvassed the exterior of the U-Haul truck looking for anything that could harm Canine Tom. (Tr. 20:24-21:9; Gov't Ex. 1 at 15:11:00-15:11:45). After determining that the wind was blowing west to east, Trooper Tiracorda decided to begin the canine search at the front of the vehicle to "use the wind to bring any odors . . . to the dog." (Tr. 13:15-14:1). As Trooper Tiracorda moved Canine Tom downwind toward the front of the U-Haul truck to begin a search pattern, Canine Tom suddenly stopped and snapped his neck and body back toward the rear wheel well on the passenger side of the truck. (Id. at 14:2-12, 22:22-23:6; Gov't Ex. 1 at 15:14:55-15:15:07). Canine Tom then

began closing his mouth and exhibited "increased shallow respirations." (Gov't Ex. 4 at 7; Tr. 14:19-23).

Trooper Tiracorda observed Canine Tom's alert behavior and immediately detailed the area by casting his hand along the bottom rail of the U-Haul truck's cargo box near the rear wheel well. (Tr. 15:18-22, 22:2-11, 23:2-14; Gov't Ex. 4 at 7; Gov't Ex. 1 at 15:15:05-15:15:15). He held the leash loose to allow Canine Tom room to maneuver. (Tr. 23:13-21; Gov't Ex. 1 at 15:15:05-15:15:15). Canine Tom paced back and forth in shorter and shorter distances as he narrowed down the source of the odor. (Tr. 24:3-9; Gov't Ex. 1 at 15:15:15-15:15:25). Canine Tom then locked onto the rear corner of the cargo area on the passenger side, froze in place, and indicated by standing, pointing his head and nose out, staring, and wagging his tail. (Tr. 15:23-16:1, 16:10-18, 24:12-16; Gov't Ex. 1 at 15:15:23-15:15:33). Although Trooper Hoy briefly stepped in between the dashboard camera and Canine Tom, Canine Tom's indication behavior is clearly visible both before and after Trooper Hoy obstructs the camera's view. (See Gov't Ex. 1 at 15:15:25-15:15:35). Trooper Tiracorda continued moving back and forth for a few moments, but Canine Tom remained frozen in place with "jaws quivering and teeth chattering." (Gov't Ex. 1 at 15:15:25-15:15:33; Gov't Ex. 4 at 7; Tr. 24:12-16). Trooper Tiracorda engaged Canine Tom in a praise off and removed him from the vicinity of the vehicle. (Gov't Ex. 1 at 15:15:33-15:15:40; Tr. 18:11-16, 25:1-10).

Trooper Tiracorda informed Trooper Hoy of the positive indication for the presence of narcotics. (Tr. 18:17-21). Trooper Hoy then opened the cargo area of the U-Haul truck and discovered thirty-three cardboard boxes, nine large plastic

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covered bags, and five suitcases. Zhou, 2018 WL 1858187, at *3. Trooper Hoy cut

open one box and "found 'vacuum sealed packages of marijuana' inside." Id. The

troopers immediately arrested defendants. (Gov't Ex. 1 at 15:16:12-15:16:25; see

Tr. 28:7-14). Trooper Tiracorda testified that the U-Haul's cargo box contained

"approximately 735 pounds of marijuana." (Tr. 18:24-25).

 After defendants were apprehended, Trooper Tiracorda placed Canine Tom

in the back of the U-Haul truck to conduct a training exercise as neither he nor

Canine Tom had ever seen such a large quantity of marijuana in one location

before. (Tr. 19:1-7, 28:3-6; Gov't Ex. 1 at 15:16:16-15:16:40). Canine Tom jumped

into cargo area of the U-Haul and indicated to the presence of narcotics by sitting

down, locking onto the boxes, staring, and wagging his tail. (Tr. 29:5-10; Gov't Ex. 1

at 15:16:30-15:16:40). Canine Tom struggled to fully sit down because his foot slid

off the back of an item on the floor of the cargo area. (Tr. 29:10-12; Gov't Ex. 1 at

15:16:30-15:16:40). Trooper Tiracorda then rewarded Canine Tom with a rubber

hose. (Gov't Ex. 1 at 15:16:40-15:16:52).

C.   Defense Expert

 Defense expert Ambrose Verrone ("Lieutenant Verrone"), a retired

lieutenant commander of the Passaic County Sheriff's Department canine division

in New Jersey, testified that Canine Tom did not exhibit alert behavior on the patrol

car's surveillance video. (Tr. 84:4-16, 86:24-25, 92:24-93:11, 95:22-25, 109:2-4; see Def.

Exs. 35, 36). Lieutenant Verrone defined an alert as "how . . . a handler interprets

[his or her] dog's behavior" including body language and breathing pattern. (Tr.

89:5-9). He described Canine Tom's behavior as simply "[a] dog being a dog." (Id.

at 93:6-11, 105:8-12). Trooper Tiracorda credibly testified, however, that Canine

Tom began closing his mouth and exhibited increased shallow respirations, (id.

at 14:19-23; see also Gov't Ex. 4 at 7), and Lieutenant Verrone conceded that the

surveillance video does not adequately depict Canine Tom's breathing patterns or

his jaw or teeth movement, (Tr. 132:2-5). Lieutenant Verrone stated that he could

not see whether Canine Tom snapped his neck back or did a "head spin" as Canine

Tom's head was concealed from view on the surveillance video by the U-Haul truck.

(Id. at 132:9-15; see Gov't Ex. 1 at 15:15:00-15:15:10). The court has carefully

reviewed the surveillance video, and the video clearly reflects that, as Trooper

Tiracorda led Canine Tom downwind toward the front of the U-Haul truck, Canine

Tom's posture visibly changed as he abruptly halted and turned back toward the

rear wheel well on the passenger side of the truck. (See Gov't Ex. 1 at 15:15:03-

15:15:08).

Lieutenant Verrone also testified that Canine Tom did not indicate to the

presence drugs on the exterior of the U-Haul truck. (Tr. 109:5-6, 129:7-11). In

support of this conclusion, Lieutenant Verrone explained that he had never seen or

trained a dog to indicate the location of narcotics by standing and staring because a

standing indication can be too easily missed by a handler. (Id. at 88:25-89:1, 109:11-

110:3). He added that the purpose of having a canine provide an indication is to

confirm the alert, because alerts are susceptible to misinterpretation. (Id. at 90:4-8,

131:4-6; see id. at 131:15-23).

There is no dispute that Canine Tom's *desired*, trained indication behavior

was to sit, lock, point, and stare at the source of the narcotic odor. (See id. at 15:23-

16:1, 16:15-18, 16:24-17:12, 29:13-16, 44:12-15, 55:21-23). However, Trooper Tiracorda explained that although Canine Tom always locks and stares, he began to stand more often as he aged. (Id. at 30:6-10). Training records for the nine months preceding the October 31, 2017 traffic stop revealed that on three occasions, Canine Tom stood, pointed, locked or froze, and stared to indicate the location of narcotics. (See Gov't Ex. 9 at 3, 18, 39). None of these standing indications resulted in a false positive, and on each occasion, Canine Tom was corrected to sit with a verbal command, leash tug, or butt tap. (Id.; Tr. 72:25-73:4, 115:4-21). The June 13, 2017 training report noted that Canine Tom's standing indication behavior "ha[d] been noticed from time to time in the field and in training on exterior trunk finds." (Gov't Ex. 9 at 39). When asked whether Trooper Tiracorda should have ignored Canine Tom's standing indication despite his history of successfully finding narcotics using that indication, Lieutenant Verrone responded "no." (Tr. 119:21-120:1). At no point did Lieutenant Verrone identify any conduct by Trooper Tiracorda that could be construed as inducing Canine Tom into a false positive indication. (See id. at 96:20-97:21).

Canine Tom expressed more excitement when indicating in the U-Haul truck's cargo area than when he indicated by the rear wheel well on the passenger side. (Compare Gov't Ex. 1 at 15:16:25-15:16:40 with id. at 15:15:10-15:15:35). Lieutenant Verrone cited this difference as evidence that Canine Tom did not indicate on the exterior of the truck. (See Tr. 98:16-23, 103:8-21). But Lieutenant Verrone then conceded that a canine would exhibit a heightened level of energy

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when in close proximity to such large quantities of narcotics because the canine's

olfactory system would be "overwhelmed with the odor." (Id. at 132:19-133:22).

II.   **Procedural History**

A federal grand jury returned a two-count indictment against defendants

on December 14, 2017. The indictment charges Zhou and Xu with one count of

conspiracy to distribute marijuana in violation of 21 U.S.C. § 846 (Count 1) and one

count of distribution and possession with intent to distribute marijuana in violation

of 18 U.S.C. §§ 841(a)(1) and 2 (Count 2). Zhou and Xu each pled not guilty to both

counts.

On January 30, 2018, Zhou and Xu moved to suppress all evidence seized

during the October 31, 2017 traffic stop. We convened a suppression hearing on

March 2, 2018. In denying defendants' first motion to suppress, we determined that

Trooper Hoy (1) had reasonable suspicion that defendants had committed a traffic

violation and (2) developed reasonable articulable suspicion that defendants were

engaged in criminal activity sufficient to extend the duration of the traffic stop and

call for a dog sniff. See Zhou, 2018 WL 1858187, at *3-5. Zhou now moves to

suppress the evidence obtained during the traffic stop on the ground that Canine

Tom did not positively identify the presence of narcotics. Xu joined in Zhou's

motion by separate notice. We convened a second suppression hearing on July 19,

2019. Zhou's motion is fully briefed and ripe for disposition.

III.   **Discussion**

The Fourth Amendment to the United States Constitution protects

individuals from unreasonable searches and seizures. See U.S. CONST. amend. IV;

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Horton v. California, 496 U.S. 128, 133 (1990). Warrantless searches generally are presumed to be unreasonable, subject to only "a few specifically established and well-delineated exceptions." Katz v. United States, 389 U.S. 347, 357 (1967). These exceptions include circumstances in which officers develop "probable cause to believe that [a] vehicle contains evidence of a crime." See United States v. Donahue, 764 F.3d 293, 299-300 (3d Cir. 2014) (citations omitted).

A canine's positive alert while sniffing a vehicle's exterior, considering the totality of the circumstances, "provides an officer with the probable cause necessary to search the [vehicle] without a warrant." United States v. Pierce, 622 F.3d 209, 213 (3d Cir. 2010) (collecting cases); see Florida v. Harris, 568 U.S. 237, 246-47 (2013). The best measure of a canine's reliability occurs "in controlled testing environments." Harris, 568 U.S. at 246. A court may assume a canine's alert establishes probable cause when (1) "evidence of a dog's satisfactory performance in a certification or training program" is presented, or (2) "a bona fide organization has certified a dog after testing his reliability in a controlled setting." Id. at 246-47. However, a defendant "must have an opportunity to challenge such evidence of a dog's reliability" through cross-examination of a testifying officer or introduction of fact or expert witnesses. Id. at 247. Circumstances surrounding the alert in a particular case may undermine the government's case for probable cause even when a generally reliable dog conducts the sniff, *e.g.*, if an officer inadvertently cues the dog. Id.

Canine Tom clearly exhibited instinctual alert behavior upon arriving at the scene of the traffic stop. On the patrol car's surveillance video, Canine Tom halted

abruptly as he walked toward the front of the U-Haul truck and then spun around to inspect the rear wheel well on the passenger side of the vehicle. (Gov't Ex. 1 at 15:14:55-15:15:07; see Tr. 14:2-12, 22:22-23:6). Trooper Tiracorda testified credibly that Canine Tom then began closing his mouth and exhibited increased shallow respirations, which is corroborated by Trooper Tiracorda's incident report. (Tr. 14:19-23; Gov't Ex. 4 at 7). This visible change in posture and altered respiration is entirely consistent with Trooper Tiracorda's definition of Canine Tom's alert behavior in this matter, (see Tr. at 14:19-23), as well as in other cases, see, e.g., Commonwealth v. Valdivia, 195 A.3d 855, 859 n.4 (Pa. 2018). Trooper Tiracorda was facing away from Canine Tom prior to this marked change in posture and breathing and at no point did Trooper Tiracorda induce Canine Tom to give a manufactured alert. (See Gov't Ex. 1 at 15:14:55-15:15:07).

The Pennsylvania State Police recertified Trooper Tiracorda and Canine Tom as a narcotics detection team less than four weeks before the search of defendants' vehicle. (See Gov't Exs. 6, 7). Trooper Tiracorda and Canine Tom trained for at least four hours each week. (Gov't Ex. 11 at 2). They attended monthly in-service training sessions, and from January 1 through October 31, 2017, Canine Tom had a 95.5% find rate in controlled training sessions. (Gov't Ex. 9 at 1, 12, 17, 22, 31, 35, 43, 50, 54, 59; Gov't Ex. 11 at 2-3; Tr. 9:16-10:6). Canine Tom successfully located narcotics on each of the three training occasions during that ten-month period where he stood rather than sat as part of his indication behavior. (See Gov't Ex. 9 at 3, 18, 39). Canine Tom's training schedule and record support a

presumption that his alert and indication behaviors are reliable.[6] See Harris, 568

U.S. at 246-47. Based on the totality of the circumstances and Canine Tom's

reliability, we find that his positive alert to the presence of narcotics near the rear

wheel well provided Trooper Hoy with probable cause to search the U-Haul truck.

Defendants cite a bevy of cases in support of the proposition that to establish

probable cause via canine alert, the canine's alert behavior must be more than the

"controversial, ambiguous[] interpretations of a handler." (Doc. 125 at 8; see id.

at 7-13). Defendants essentially encourage the court to interpret Pierce's clear

statement that a canine's positive *alert* establishes probable cause to search a

vehicle in a manner that renders an alert "more akin to an 'indication.'" (See id.

at 11). We decline to do so.

In Pierce, the Third Circuit determined that the canine's change in posture

and an increased desire to sniff a particular area of a vehicle constituted a positive

alert and provided officers probable cause to search the vehicle. See Pierce, 622

F.3d at 211-12, 215. The officer described the canine's positive alert behavior as

getting excited, taking deep breaths, an increased tail wagging, and sniffing. Id. at

211. The canine's alert behavior during the traffic stop—jumping onto its hind legs

in an effort to smell the vehicle's dashboard—in no way resembles the controlled

behavior that constitutes Canine Tom's trained indication. Compare id. at 211 with

(Tr. 16:24-17:8, 29:13-16, 44:12-15; Gov't Ex. 1 at 15:15:23-15:15:33). And in a recent

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[6] We reject any contention that Canine Tom's reliability should be questioned based on the Pennsylvania State Police's two-year record retention policy. Training records for 2017 and 2018 were produced to defendants in advance of the July 19, 2019 suppression hearing pursuant to court order. (See Doc. 91).

nonprecedential decision, the Third Circuit affirmed that a canine's alert to the presence of narcotics is sufficient to provide probable cause and that an indication, though helpful, "is not material to a probable cause finding." United States v. Johnson, 742 F. App'x 616, 622-23 (3d Cir. 2018) (nonprecedential), cert. denied, 139 S. Ct. 1467 (2019) (citing Pierce, 622 F.3d at 213).

Assuming *arguendo* that Third Circuit precedent supported defendants' more taxing standard for what constitutes a positive and reliable *alert*, Trooper Hoy still had probable cause to search the U-Haul truck because Canine Tom also indicated to the specific location of the narcotics. Trooper Tiracorda cast a two-meter area around the rear wheel well where Canine Tom first alerted to the presence of narcotics. (Tr. 15:18-22, 22:2-11, 23:2-14; Gov't Ex. 4 at 7; Gov't Ex. 1 at 15:15:05-15:15:15). Canine Tom locked onto and stared at a portion of the truck, remained standing frozen in place, and stretched out his head and nose to pinpoint the source of the narcotic odor. (Tr. 15:23-16:1, 16:10-18, 24:12-16; Gov't Ex. 1 at 15:15:23-15:15:33). The patrol car surveillance video clearly shows this indication behavior before and after Trooper Hoy stepped in between the dashboard camera and Canine Tom. (Gov't Ex. 1 at 15:15:23-15:15:33). Trooper Tiracorda engaged Canine Tom in a praise off only *after* Canine Tom clearly indicated to the location of the narcotics. (Gov't Ex. 1 at 15:15:33-15:15:40; Tr. 18:11-16, 25:1-10). For all of these reasons, we conclude that Trooper Hoy's reasonable suspicion that defendants were engaged in criminal activity, combined with Canine Tom's positive alert and indication to the presence of narcotics on the exterior of the vehicle, established probable cause to search the defendants' U-Haul truck.

IV. **Conclusion**

The motion (Doc. 72) to suppress will be denied. An appropriate order shall

issue.

                                                    /S/ CHRISTOPHER C. CONNER
                                                    Christopher C. Conner, Chief Judge
                                                    United States District Court
                                                    Middle District of Pennsylvania

Dated: August 6, 2019